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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/443,460	11/19/1999	KAZUOMI KOBAYASHI	Q56893	7280

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WASHINGTON, DC 20037

EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

10

DATE MAILED: 05/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/443,460

Applicant(s)

KOBAYASHI ET AL.

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to: \_\_\_\_\_
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "relatively soft" in claims 1 and 10 is a relative term that renders the claim indefinite. The term "relatively soft" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is noted that dependent claims 6 and 15 are directed to the 50% modulus of the rubber protection sheet, which is an indication of the relative hardness of the rubber compound. It is suggested that applicant incorporate such language to better define the scope of the claimed invention.

With respect to claim 14, applicant requires that the at least one protection sheet is disposed along the turnup portion of the carcass ply between the turnup portion and the bead filler rubber. However, independent claim 10 requires that the at least one rubber protection sheet is disposed between the rubber-reinforcing layer and the carcass ply nearest thereto. Thus, since the rubber-reinforcing layer is disposed at an inner surface side of an innermost carcass ply, the limitations of claims 10 and 14

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contradict each other, rendering the claim indefinite. Applicant is asked to clarify the positioning of the rubber protection sheet without the introduction of new matter.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Deck (US 4,287,924). Deck et al. teach the manufacture of a safety tire that contains the following design: a radial carcass, comprised of one or more layers of flexible cords, extending between a pair of bead cores, a belt arranged at an outer peripheral surface of the carcass, a crescent-shaped rubber reinforcing layer arranged at an inner surface side of an innermost carcass ply, and a soft, rubber protection sheet that is disposed between the rubber reinforcing layer and the nearest carcass ply (Column 1, Lines 22-30).

It should be initially noted that the reference does not specifically recognize the tire as a "runflat tire"; however, the reference does suggest that the invention relates to safety tires that comprise self-supporting sidewalls which allow said vehicles to continue to roll normally or almost normally after a puncture (Column 1, Lines 6-10).

With respect to claim 11, it can be seen from Figure 1 that the single ply of the carcass is a turnup ply wound around the bead core from an inside of the tire toward an outside thereof and consists of a toroidally extending main body and a turnup portion.

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Regarding claim 12, it is evident from Figure 1 of Deck that the rubber protection sheet is existent over both sides of a straight line drawn from a curvature center of a rim flange at an inclination angle of 60 degrees outwardly in a radial direction of the tire with respect to a line segment drawn from the curvature center in parallel to a rotating axial line of the tire toward the inside of the tire.

With respect to claim 13, it can be seen from Figure 1 that the rubber protection is existent between line segments in parallel to the rotating axial line of the tire respectively passing through an outer end of the bead filler rubber in the radial direction of the tire and an inner end of the rubber reinforcing layer in the radial direction of the tire.

It should lastly be noted that the claim is directed to at least one "rubber protection sheet". In this instance, part 20<sub>g</sub> of Deck is analogous to the rubber protection sheet. It is not believed that the term "sheet" distinguishes over the relevant tire component of Deck, especially since part 20<sub>g</sub> of Deck has a relatively small thickness and is conventionally applied to a drum or the like in sheet form during processing.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osawa (JP 04-274909) in view of Spragg (US 5,769,980, of record). As best

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depicted in Figures 2, 6, and 7, Osawa discloses a pneumatic tire construction having a radial carcass extending between a pair of bead cores, a tread portion comprised of one or more rubberized cord plies, a belt arranged at an outer peripheral surface of said carcass, a bead filler rubber taperingly extending toward an outer end of said tread portion, and a shock absorption rubber layer (rubber protection sheet) disposed between said bead filler rubber and the carcass ply surrounding it, such that said rubber protection sheet is disposed radially inward from a position of a line segment in parallel to the rotating axial line of the tire passing through an outer end of said bead filler rubber. However, the reference is silent with respect to the use of a sidewall rubber-reinforcing layer arranged at an inner surface side of an innermost carcass ply to form a tire having runflat capability. In any event, sidewall rubber-reinforcing layers are conventionally employed in such a location to provide a tire with runflat capability, as evidenced by Spragg in Figure 1. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a sidewall rubber-reinforcing layer in accordance to the limitations of the claimed invention, in view of Spragg, as set forth below.

With respect to claim 1, Osawa is directed to a pneumatic tire construction in which a rubber protection sheet is disposed between a bead filler rubber and an adjacent carcass ply. In describing the rubber protection sheet, Osawa suggests a modulus or hardness having an intermediate value, as compared to the bead filler and main carcass portion. Osawa states that this rubber layer is used to (a) eliminate the large shearing distortion that occurs between the main carcass portion and the bead

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filler rubber at a radial height that is equivalent to the carcass turnup height and (b) improve bead durability. Although Osawa is not specifically directed to a runflat tire, it is (★) well known and conventional to include a pair of sidewall rubber-reinforcing layers in order to eliminate the sidewall and tread buckling that is associated with a deflated condition. For example, Spragg provides one example of the conventional use of sidewall rubber-reinforcing layers that extend from the bead portion to the tread portion. One of ordinary skill in the art at the time of the invention would have been motivated to include a pair of sidewall rubber-reinforcing layers in the tire design of Osawa in order to provide runflat capability and eliminate the sidewall and tread buckling normally encountered in a deflated condition. }

Regarding claim 2, Osawa depicts a carcass ply that is turned around the bead core from an inside toward an outside.

As per claim 3, Figures 2, 6, and 7 clearly depict the rubber protection sheet as being disposed over both sides of a straight line drawn from a curvature center of a rim flange at an inclination angle of 60° outwardly in a radial direction with respect to a line segment in parallel to a rotating axial line of the tire.

With respect to claim 4, Figures 2, 6, and 7 depict the rubber protection sheet as extending radially inward of the outer end of the bead filler rubber. In modifying Osawa with a conventional sidewall rubber-reinforcing layer, one of ordinary skill in the art at the time of the invention would have readily appreciated and expected the radially inner end of the rubber protection sheet to be radially outward of the radially inner end of said

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rubber reinforcing layer as said sidewall rubber-reinforcing layers conventionally extend well into the bead portion and approach the radially inner end of the bead core.

Regarding claim 5, the claim is only directed to the embodiment in which the rubber protection sheet is disposed along the turnup portion and therefore the limitations of this claim are not required in the tire design of Osawa in which the rubber protection sheet is disposed along the main portion of the carcass ply.

With respect to claim 6, as stated above, the rubber protection sheet of Osawa has a modulus or hardness that is between the bead filler rubber and the carcass coating rubber. It is extremely well known that sidewall rubber-reinforcing layers, in a similar manner to bead filler rubbers, are formed of high modulus/hardness and low hysteresis rubber compounds while the carcass coating rubber is formed of a lower modulus/hardness compound, as compared to the sidewall rubber-reinforcing layer and the bead filler rubber. As such, one of ordinary skill in the art at the time of the invention would have expected the 50% modulus of the rubber protection sheet to be within the broad range of the claimed invention (0.30 and 0.84 times that of the sidewall rubber-reinforcing layer).

As per claim 8, applicant defines a broad range for the thickness of the rubber protection sheet. In this instance, Osawa states that the total thickness of the shock absorbing layer and coating rubber is less than or equal to four times the diameter of the organic fiber cords (Abstract). Although no specific values are provided, one of ordinary skill in the art at the time of the invention would have found the claimed range obvious in view of the quantitative relationship described by Osawa. Therefore, the



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thickness of the shock absorption layer is dependent on the size of the carcass cords and ultimately upon the type of tire. It is further noted that the coating rubber generally has a total thickness (upper and lower) that is approximately equal to the cord thickness, suggesting that the shock absorption layer has a thickness that is less than or equal to three times the cord diameter. This relationship, then, only requires that the cord thickness be greater than 0.13 mm, it being recognized that almost all carcass plies are formed of cords having a diameter greater than 0.13 mm.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deck.

As previously stated, Deck teaches a pneumatic tire construction having a sidewall rubber-reinforcing layer and a rubber protection sheet in accordance to the limitations of the claimed invention. In describing these rubber components, Deck states that the rubber protection sheet is of a more flexible elastomer as compared to the sidewall rubber-reinforcing layer, further suggesting a modulus of elasticity of no greater than 80 bars for the rubber protection sheet and a modulus of elasticity between 70 and 100 bars for the sidewall rubber-reinforcing layer (Column 1, Lines 51-60). Although the 50% modulus (modulus of elasticity at 50% elongation) is not detailed by Deck, one of ordinary skill in the art at the time of the invention would have appreciated the relative ratios of the 100% modulus to be similar with respect to the 50% modulus. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the tire of Deck with the specified modulus properties as set forth below.

As previously noted, Deck discloses a rubber protection sheet that has a lower 100% modulus of elasticity and lower hardness value as compared to the sidewall

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rubber-reinforcing layer. Thus, based on the relationship between the 50% modulus and the 100% modulus, it is evident that the 50% modulus of the rubber protection sheet is between 0 and 1.0 times that of the sidewall rubber-reinforcing layer.

Furthermore, based on the suggested values for the 100% modulus, one of ordinary skill in the art at the time of the invention would have readily appreciated and expected the 50% modulus of the rubber protection sheet to be within the broad range defined the claimed invention (0.30-0.84 times sidewall rubber-reinforcing layer). Therefore, absent any unexpected results, the construction of the claimed invention would have been obvious in view of Deck since (a) Deck defines the rubber protection sheet as softer and having a lower 100% modulus, as compared to the sidewall rubber-reinforcing layer and (b) the range of the claimed invention is broad and, absent any unexpected results, would have been obvious in view of the aforementioned teachings by Deck.

***Allowable Subject Matter***

8. Claims 7, 9, and 16-18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. There was no reference in the prior art search that suggested the manufacture of runflat, pneumatic tires having a pair of sidewall rubber-reinforcing layers and at least one rubber protection sheet, wherein the at least one rubber protection sheet is disposed within the claimed portion of the bead region and is formed of a rubber compound having a loss tangent at 25 °C of 0.04-0.11. Also, there was no reference in the prior art search that suggested the use of two rubber protection sheets, wherein said rubber protection

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sheets are disposed either between the bead filler rubber and the adjacent carcass ply or between the sidewall rubber-reinforcing layer and the adjacent carcass ply.

***Response to Arguments***

9. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection. Applicant argues the use of Tsuruta (JP 10076820) as follows: (a) the reference is not directed to a runflat pneumatic tire and does not describe technology reasonably capable of modification into runflat configuration and (b) the reference teaches away from the use of sidewall rubber-reinforcing layers in that it states "without especially arranging additional reinforcing members at the bead portion...". Regarding the first argument, although Tsuruta is not directed to a "runflat tire", the use of sidewall rubber-reinforcing layers to impart runflat capability is well known and conventional in the tire industry. One of ordinary skill in the art at the time of the invention would have readily appreciated the employment of sidewall rubber-reinforcing layers in accordance to the limitations of the claimed invention in a variety of pneumatic tires; however, in this instance, Tsuruta, provides a negative teaching with respect to the use of additional reinforcing layers in the bead portion and as such, one of ordinary skill in the art at the time of the invention would not have been directed toward the manufacture of runflat tires having the combination of reinforcing features required by the claimed invention. Therefore, the rejection with respect to Tsuruta has been withdrawn.

The applicant also contends, with respect to Tsuruta, that the reference is directed to improvement of tire durability and in particular the bead portion during

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running under normal inflation pressure. It is assumed by the examiner that the applicant would hold this same contention with respect to the new rejection set forth above (Osawa). Osawa is similarly concerned with improvement of bead durability and specifically mentions the elimination of shearing strains that occur between the bead filler rubber and the carcass ply, it being noted that the rubber protection sheet of the claimed invention is similarly concerned with shearing strains in the bead portion. In this instance, though, Osawa does not provide a negative teaching with respect to additional reinforcing layers and therefore one of ordinary skill in the art at the time of the invention would have found the combination of reinforcing elements to be obvious, in view of Osawa and Spragg. The use of sidewall rubber-reinforcing layers to impart "runflat capability" would have been desirable to eliminate the sidewall buckling and allow the tire to operate in a deflated condition until a repair location is reached.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Iuchi (US 4,917,166) discloses a heavy-duty tire construction in which a rubber protection sheet is disposed between a carcass ply and the bead filler rubber, wherein the rubber protection sheet is described as being formed of a hard rubber. Kawabata (EP 0515226) is directed to a runflat pneumatic tire having a first sidewall rubber-reinforcing layer (50) that is disposed radially inward of the carcass structure and a rubber protection sheet (60) that is disposed between said first sidewall rubber-reinforcing layer and the bead filler rubber. In this instance, the rubber protection sheet is not disposed between the first sidewall rubber-reinforcing layer and

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the bead filler rubber in a region that is radially inward of the outermost point of the bead filler rubber and furthermore, the rubber protection sheet is described as having a higher hardness than the first sidewall rubber-reinforcing layer. Kajikawa (US 5,058,646) discloses a pneumatic safety tire construction comprising a sidewall rubber-reinforcing layer at a position that is inward of the adjacent carcass ply and a flipper that is between said sidewall rubber-reinforcing layer and the bead filler rubber and disposed in a region that is radially inward of the bead filler rubber.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin R Fischer whose telephone number is (703) 605-4397. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Justin Fischer

May 20, 2002

  
Michael W. Ball  
Supervisory Patent Examiner  
Technology Center 1703